

A NEW SUBSPECIES AND NEW COMBINATION IN *FRANGULA PURSHIANA*  
(RHAMNACEAE) FROM THE SIERRA NEVADA, PLUMAS  
COUNTY, CALIFORNIA

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ABSTRACT

We describe *Frangula purshiana* (DC.) Cooper subsp. **ultramafica** J. O. Sawyer & S. W. Edwards, an endemic to the Sierra Nevada in Plumas National Forest, and compare it with other subspecies of *F. purshiana*. We discuss the use of the generic names **Frangula** and **Rhamnus** in the California flora. We also make a new combination *Frangula purshiana* (DC.) Cooper subsp. **annonifolia** (Greene) J. O. Sawyer & S. W. Edwards.

Key Words: *Frangula*, Plumas County, *Rhamnus*, Rhamnaceae, serpentine.

**Frangula purshiana** (DC.) Cooper subsp. **ultramafica** J. O. Sawyer & S.W. Edwards, subsp. nov. (Fig. 1).

Frutex plerumque minor quam 2 m altus; rami alterni flexiles sine squamis hibernaculorum, cortice cinerea; ramuli virides vel cinerei vel obscure brunnei, profuse pubescentes; folia decidua vel semidecidua, prope gemmas terminales congesta; petiolus 5–15 mm longus; lamina coriacea, 50–100 mm longa, late oblonga vel ovalis vel obovata, basi obtusa vel decrescenti, apice late oblongo saepe emarginato, margine integro vel parum serrulato et plerumque undulato, pagina superiore in vivo glaucescenti vel glauca ob ceram ex caeruleo vel viridi cineream, papillata, sparse vel manifeste pubescenti vel velutina, pagina inferiore pallide viridi venis prominentibus, venis 1° et 2° valde, 3° modice pubescentibus; inflorescentia umbella axillaris; flos bisexualis; fructus putaminibus 3, in maturitate niger.

*Shrub* generally less than 2 m; *branches* alternate, flexible, terminal bud scales lacking; bark ash gray; twigs green to ash gray or dull brown, profusely pubescent; *leaves* deciduous or semideciduous, clustered near terminal buds; petiole 5–15 mm; blade coriaceous, 50–100 mm, broadly oblong, oval to obovate; base obtuse or tapered; tip broadly oblong, often emarginate; margin entire to slightly serrulate and commonly wavy; adaxial surface, when fresh, glaucescent to glaucous from a bluish or greenish gray wax, papillate, and sparsely to markedly pubescent or velvety; abaxial surface light pale green with prominent veins, 1° and 2° veins very pubescent, 3° veins moderately so; inflorescence an axillary umbel; *flower* bisexual; *fruit* 3-stoned, black at maturity.

*Type*: USA, CA, Plumas County, T 25N R7W sect. 11. Lat. N 40.04343 Long. W 121.15971. Elev. 1572 m. Plumas National Forest. W of Forest Service Road 26N22F ca.0.6 km (1 mile) SW from the intersection of 26N22F and 26N22 at Deadwood Saddle east of Red Hill. Hillside of serpentinized peridotite in open, mixed forest. 2 August 2004. *J. P. Smith & J. O. Sawyer 11,990* (HOLOTYPE: HSC; Isotypes: CAS, JEPS, MO, RSA)

*Paratypes*: USA, CA, Plumas County, Plumas National Forest. T 26N R7W sect. 33. Lat. N 40.05929 Long. W 121.20166. Elev. 823 m. ca. 4.8 km S of Caribou along the Caribou Road (Forest Service Road 27N26). Serpentine seep. 12 September 2004. *J. P. Smith & J. O. Sawyer 12,044* (HSC); T 24N R8W sect. 4. Long. N 39.912 Lat. W 121.09165. Elev. 1402 m (4600 ft). ca. 6.4 N of Spanish Ranch near Bean Hill off Forest Service Road 25N17. Douglas-fir–ponderosa pine forest. 13 September 2004. *J. P. Smith & J. O. Sawyer 12,055* (HSC); T 23N R6W sect. 21. Lat. N 39.83402 Long. W 121.30822. Elev. 1572 m (5400 ft). Duplicates to be distributed.

Miller described *Frangula* in 1754, and early botanists of the California flora used both *Frangula* (Gray 1849) and *Rhamnus* (Brewer and Watson 1880). Weberbauer (1895) considered *Frangula* a subgenus of *Rhamnus*. Wolf (1938) in his classic treatment of *Rhamnus* in North America recognized two species in California in the subgenus *Eurhamnus*—*R. ahnifolia* and *R. crocea*, and three species in the subgenus *Frangula*—*R. californica*, *R. rubra*, and *R. purshiana*, based on the presence or lack of winter bud scales, thorns, type of inflorescence, sexuality, number of petals, and style length



FIG. 1. Photograph of *Frangula purshiana* subsp. *ultramafica* at the Red Hill occurrence by J. Sawyer.

differences. Bolmgren and Oxelman (2004) investigated the generic limits of *Rhamnus* using nuclear and chloroplast DNA sequence techniques. Their results showed species assigned to subgenus *Frangula* to be monophyletic and distinct from the rest of *Rhamnus*. The treatment in the forthcoming revision of *The Jepson Manual* (Sawyer 1993) will accept *Frangula* and *Rhamnus* (J. Sawyer personal communication).

*Frangula purshiana* subsp. *ultramafica* (Fig. 1) appears to be restricted to the Feather River complex (Alexander et al. 2007) of serpentinized peridotite and associated mafic and ultramafic substrates near Bucks Lake. The largest occurrence is on the North Fork of the Feather River near Red Hill north of Serpentine Canyon and State Route 70. The road to the top of Red Hill (1935 m) passes through open, mixed forests of *Abies concolor* (Gordon & Glend.) Lindley, *A. magnifica* A. Murray bis, *Calocedrus decurrens* (Torrey) Florin, *Pinus jeffreyi* Grev. & Balf., *P. lambertiana* Douglas, *Quercus chrysolepis* Liebm., and *Pseudotsuga menziesii* (Mirbel) Franco. Shrubs scattered with the new coffee berry include *Arctostaphylos nevadensis* A. Gray, *A. patula* E. Greene, an unusual form of *Ceanothus cuneatus* (Hook.) Nutt. (Edwards 1990; Fross

and Wilken 2006), and *Quercus vacciniifolia* Kellogg. Coffee berry plants become more common at higher elevations. Other habitats include seeps, rocky streambeds; open *Pseudotsuga menziesii*-*Pinus ponderosa* forests and *Arctostaphylos patula* chaparral. We recommend the name "ultramafica," since plants grow on ultramafic substrates, and "Caribou coffee berry," since it grows near the mining town of Caribou.

Over a decade ago, Edwards (1990) first discussed this plant from the Red Hill area, and compared it with other *Frangula* that grow in the northern Sierra Nevada. Its firm, bluish or greenish-grayish leaves are suggestive of evergreen *Frangula californica* (Eschsch.) A. Gray subsp. *tonnentella* (Benth.) Kartesz & Gandhi, but they are broader and larger. Its leaves are deciduous as in *Frangula rubra* (E. Greene) V. Grub., but it is most like *F. purshiana* (DC.) Cooper with large, broad leaves and fruits with three stones.

Another subspecies occurring in the northern Sierra Nevada is *Frangula purshiana* (DC.) Cooper subsp. *annonifolia* (E. Greene) J. O. Sawyer & S. W. Edwards comb. nov. Based on *Rhamnus anonaefolia* E. Greene, *Pittonia* 3: 16. 1896. Mountains of Placer County, California,

where it was collected by A. M. Carpenter in 1892. Synonymy: *Rhamnus purshiana* DC. var. *anonaefolia* (E. Greene) Jepson Man. Fl. Pl. Calif. p. 614. 1925. Greene used *Anona* P. Miller as the basis of the epithet of his new species. That name has since been replaced by *Annona* L. A second orthographic correction, based on the Article 60 of the International Code of Botanical Nomenclature (Greuter et al. 2000), recommends replacing “ae” with “i” as compounding forms, resulting in the spelling “annonifolia.”

KEY TO FRANGULA PURSHIANA TAXA

- 1. Upper blade surface, when fresh, glaucescent to glaucous from a bluish or greenish gray wax, with papillae, and sparsely to markedly pubescent or velvety . . . . . *F. purshiana* ssp. *ultramafica*
- 1' Upper blade surface, when fresh, bright green, lacking a wax, papillae, and glabrous to sparsely pubescent
- 2. Blade base tapering; plants inland . . . . . *F. purshiana* ssp. *annonifolia*
- 2' Blade base rounded or heart-shaped; plants coastal. . . . . *F. purshiana* ssp. *purshiana*

ACKNOWLEDGMENTS

We thank Mark Garland for the Latin description. We appreciate James P. Smith’s constructive suggestions for improving this paper. We also thank James B. Belsher-Howe, District Botanist, Mt. Hough Ranger District, Plumas National Forest, for his review and help in the field.

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